CSS-114- FUNDAMENTALS OF PROGRAMMING

LAB MANUAL #6

LAB AND HOME TASK

Course Instructor: Dr. Jawad Khan

Lab Instructor: Muhammad Affan

Student Name: ABDULLAH BIN KHORRAM

CMS ID: 466612

DATE: 19th NOVEMBER, 2023.

Lab Task:

1. Generate the Fibonacci sequence using nested loops.

```cpp
#include<iostream>
using namespace std;
int main(){
    cout<<"LAB TASK 1, GENERATE THE FIBIONACCI SEQUENCE USING LOOPS."<<endl;
    int first, second, add, lim;
    cout<<"Please enter the chosen limit in the sequence:"<<endl;
    cin>>lim;
    cout<<"Please enter the first two numbers:"<<endl;
    cin>>first>>second;
    for(int i=0; i<= lim-3; i++){  //since first two numbers are already set, loop will run until lim-3
        add = second + first;    //using an intermediate integer, the two preceding values are added to create a third value up until the limit
        first = second;
        second = add;
        cout<<add<<endl;
    }
```

CODE RESULT:

```
LAB TASK 1, GENERATE THE FIBIONACCI SEQUENCE USING LOOPS.
Please enter the chosen limit in the sequence:
9
Please enter the first two numbers:
0
1
1
2
3
5
8
13
21
LAB TASK 2, PRINT FLOYD'S TRIANGLE USING NESTED LOOPS.
Please enter the number of rows for the triangle:
```

2. Create Pascal's triangle with nested loops.

(TASK WAS CHANGED TO CREATE FLOYD'S TRIANGLE)

```
cout<<"LAB TASK 2, PRINT FLOYD'S TRIANGLE USING NESTED LOOPS."<<endl;
int row,e=1;
cout<<"Please enter the number of rows for the triangle:"<<endl;  //number of rows are input by the user
cin>>row;
for(int r=1;r<=row;r++){
for(int c=1;c<=r;c++){   //there are as many rows as there are columns so c<=r
cout<<" "<<e;
e=e+1;  } //e is printed, after which its value is increased by one and if c<= loop continues
cout<<endl;
}
```

CODE RESULT:

```
LAB TASK 2, PRINT FLOYD'S TRIANGLE USING NESTED LOOPS.
Please enter the number of rows for the triangle:
7
 1
 2 3
 4 5 6
 7 8 9 10
 11 12 13 14 15
 16 17 18 19 20 21
 22 23 24 25 26 27 28
```

Home Task:

1. Write a program using break or continue statement that only adds prime numbers from 1 to 50 and display the sum on screen.

```
cout<<"HOME TASK 1, ADDING PRIME NUMBERS FROM 1 TO 50"<<endl;
int i, j, Prime, sum=0; //set variable sum to be 0
for(i=2; i<=50; i++)
{
Prime = 1;
for(j=2; j<=i/2 ;j++){
if(i%j==0){  //check if number is prime
Prime = 0;
break; }
}
if(Prime==1){
sum += i; } } //if prime, number is added to sum and loop continues
cout<<"The Sum Of all Prime Numbers from 1 to 50:\n"<<sum<<endl;
```

CODE RESULT:

```
HOME TASK 1, ADDING PRIME NUMBERS FROM 1 TO 50
The Sum Of all Prime Numbers from 1 to 50:
328
```

2. Write a program in C++ to create the following pattern.

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

```
cout<<"HOME TASK 2."<<endl;
for(int ro=1;ro<=5;ro++){
for(int co=1;co<=ro;co++){    //as many rows as columns, so co<=ro
cout<<" "<<co;}   //the number which is the number of that column is printed to make the pattern
cout<<endl;
}
```

CODE RESULT:

```
HOME TASK 2.
 1
 1 2
 1 2 3
 1 2 3 4
 1 2 3 4 5
```

3. Write a C++ program to print:

1

2 2

4 4 4 4

6 6 6 6 6 6

```
cout<<"HOME TASK 3."<<endl;
cout<<" 1"<<endl;   //start of the pattern is 1
for(int ra=1;ra<=6;ra++){ //six rows
for(int ca=1;ca<=ra;ca++){     //as many rows as columns, so ca<=ra
    if(ra%2==0){ //check if the number in each printed row is even or not, if not, don't print it
cout<<" "<<ra;}  //the number which is the number of that row is printed to make the pattern
else break; }
cout<<endl;
}
return 0; }
```

CODE RESULT:

```
HOME TASK 3.
 1

 2 2

 4 4 4 4

 6 6 6 6 6 6
```